

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference KLA1P018.WO	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 01/41932	International filing date (day/month/year) 28/08/2001	(Earliest) Priority Date (day/month/year) 30/08/2000
Applicant KLA-TENCOR CORPORATION		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2

☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

An overlay mark(70) for determining the relative shift between two or more successive layers of a substrate is disclosed. The overlay mark includes at least one test pattern(78) for determining the relative shift between a first and a second layer of the substrate in a first direction. The test pattern includes a first set of working zones(72,A,D) and a second set of working zones(72,B,C). The first set of working zones (72,A,D) are disposed on a first layer of the substrate and have at least two working zones diagonally opposed and spatially offset relative to one another. The second set of working zones(72B,C) are disposed on a second layer of the substrate and have at least two working zones diagonally opposed and spatially offset relative to one another. The first set of working zones are generally angled relative to the second set of working zones thus forming an "X" shaped test pattern.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/66 H01L23/544 G03F7/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L G03F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 841 144 A (CRESSWELL MICHAEL WILLIAM) 24 November 1998 (1998-11-24) column 5, line 6 - line 14; claims 1,4-6	1-12,14, 15,17, 18,22, 23, 25-28, 32-35, 39-49, 51-57
Y	US 5 172 190 A (KAISER PAUL) 15 December 1992 (1992-12-15) claims 1-3,8; figure 1 -/--	1-12,14, 15,17, 18,22, 23,25-28



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

24 January 2002

Date of mailing of the international search report

31/01/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Ahlstedt, M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 820 055 A (MUELLER KARL-HEINZ) 11 April 1989 (1989-04-11) the whole document ---	32-35, 39-49, 51-57
A	US 6 084 679 A (STEFFAN PAUL J ET AL) 4 July 2000 (2000-07-04) the whole document ---	1-57
A	EP 0 947 828 A (SIEMENS AG ;IBM (US)) 6 October 1999 (1999-10-06) claim 2; figure 2 ---	1-57
A	EP 0 818 814 A (KLA INSTR CORP) 14 January 1998 (1998-01-14) column 1, line 3 -column 2, line 21 column 3, line 42 -column 4, line 34 ---	1-57
A	US 6 079 256 A (BAREKET NOAH) 27 June 2000 (2000-06-27) column 11, line 6 - line 19 -----	1-57

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5841144	A	24-11-1998	US 5617340 A	01-04-1997
			US 5684301 A	04-11-1997
			US 5923041 A	13-07-1999
			US 5699282 A	16-12-1997
			US 5920067 A	06-07-1999
US 5172190	A	15-12-1992	DE 4000785 A1	18-07-1991
			DE 59010766 D1	06-11-1997
			EP 0436930 A2	17-07-1991
			JP 3073776 B2	07-08-2000
			JP 6069092 A	11-03-1994
			SG 76471 A1	21-11-2000
US 4820055	A	11-04-1989	DE 3530439 A1	26-02-1987
			JP 62048020 A	02-03-1987
US 6084679	A	04-07-2000	NONE	
EP 0947828	A	06-10-1999	CN 1238461 A	15-12-1999
			EP 0947828 A2	06-10-1999
			JP 11325877 A	26-11-1999
			TW 414992 B	11-12-2000
EP 0818814	A	14-01-1998	US 6023338 A	08-02-2000
			EP 0818814 A2	14-01-1998
			US 6079256 A	27-06-2000
US 6079256	A	27-06-2000	US 6023338 A	08-02-2000
			EP 0818814 A2	14-01-1998